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VI
EXPEDITION OF THE CALIFORNIA ACADEMY
OF SCIENCES TO THE GULF OF
CALIFORNIA IN 1921

GENERAL ACCOUNT

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The California Academy of Sciences has long considered the Peninsula of Lower California and the adjacent islands as constituting one of its principal fields for exploration and research. Prior to the loss sustained by the fire of 1906 the Academy had large and valuable collections from that region. Efforts have been made to replace those collections and in 1919 field work was carried on in the "Cape Region" of Lower California, where considerable collections were obtained.

In 1921, the Academy was able to send an expedition to the Gulf of California. The purpose of this expedition was to make as comprehensive and thorough study of the fauna and flora of the islands in the Gulf, and of localities on the adjacent mainland, as time, funds, and weather conditions would permit. This would include, of course, the making of as extensive collections in the various groups as possible.

To enable this object to be accomplished, the Academy chartered the gasoline schooner *Silver Gate*, Capt. John Ross. The *Silver Gate* is 64.5 feet over all, 15 feet beam, 22 tons,

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capable of making eight knots, had a cruising radius of 2000 miles, and carried a crew of four men.

The personnel of the expedition was as follows: Joseph R. Slevin, assistant curator of herpetology, in charge; Edward P. Van Duzee, curator of entomology; Dr. Fred Baker of Point Loma, Calif., representing the department of paleontology; Virgil W. Owen of Los Angeles, representing the department of ornithology and mammalogy; Ivan M. Johnston of the University of California, representing the department of botany; Joseph C. Chamberlin of Stanford University, assistant to Mr. Van Duzee; Señor Francisco Contreras and Señor Carlos Lopez of the Museo Nacional de Mexico, representing that institution; and Capt. John Ross in command of the *Silver Gate*.

Messrs. Slevin and Chamberlin sailed from San Francisco for Guaymas on the motor ship *Mazatlan*, April 3. At San Pedro, Calif., they were joined by Messrs. Baker, Johnston and Owen, and arrived at Guaymas April 13, where they were joined by Mr. Van Duzee who had gone down from San Francisco by rail, and by Señors Contreras and Lopez. All reported on board the *Silver Gate*.* Stores and equipment were taken on board on the 14th and 15th, and at 4:40 P. M. of the 16th, departure was taken for San Carlos Bay, coast of Sonora, to anchor for the night, and to shorten the run to the first island to be visited. The real work of the expedition began on April 17, when a landing was made on San Pedro Nolasco, a small volcanic island about two miles long and three-fourths of a mile wide. The landing place is given as on the S. E. side but the high bluffs back of the beach at this point make it impossible to reach the top of the island. By cruising along the eastern shore, a place was found at the N. E. end, opposite a small cañon, which is partly sheltered from the N. W. winds where a landing can be made only in fine weather.

Although a steep and rough climb, the top of the island may be reached from this point. A large colony of brown pelicans

*One of the most pleasant features of the expedition was the very cordial relations between the representatives of the Academy and the Mexican officials and others with whom the expedition came in contact. Señors Contreras and Lopez were always gracious and anxious to assist in making the work a success, as were the officials at the various places where landings were made. The grateful appreciation of the Academy of the many courtesies received is hereby expressed to all who so kindly contributed to the success of the expedition.

was found at the head of the cañon, and many large rock iguanas (*Ctenosaura*) were sunning themselves upon the tops of the large boulders. A day was spent here, the vessel lying off while the party was ashore.

Departure was taken early in the evening, and San Pedro Martir Island, a small triangular barren rock, was reached at daybreak next morning. The island is less than a mile in length and about 1000 feet in height. It was formerly a great sea-bird rookery but appears to have been long deserted, probably due to the depredations of the guano hunters. Good anchorage is to be found opposite a high bluff on the east side, but the landing must be made on the south side where the rock slopes down to the water's edge. The island is occasionally visited by fishermen and sealers. A party of the latter was found camped on the beach at the time of our visit.

After a day's stop here, the expedition continued northward, and on April 19 anchored off a large valley on the east side of San Esteban Island. The country was extremely rough, and dry, and cut up into small washes and cañons not unlike some of the country in our own southern deserts. One is at once struck by the great number of immense chuckwallas (*Sauromalus*) on San Esteban scattered about in the cactus patches, and by the large rock iguanas (*Ctenosaura*) sometimes seen sunning themselves on the tops of the giant cacti.

A stop of two days being made here, departure was taken for Isla Raza, a small low rocky island about three-fourths of a mile long, on which a landing was made on the morning of April 21. It was hoped to find here the eggs of Heermann's gull. The birds were found by the thousands scattered over the island, but evidently the nesting season was not in full swing as only a few sets of eggs were found. The itinerary was changed here in order to make another visit at a little later date, and owing to the poorly protected anchorage from the strong N. W. winds blowing over the top of the island, a run was made four and a half miles to the northwest and anchorage made under the lee of Isla Partida, which consists of two small peaks connected by a low isthmus, the whole being a little over a mile long and about half a mile wide. It affords good anchorage from both northerly and southerly winds. A rock slide was found on the eastern slope of the southern peak

where many black petrels and least petrels were nesting, and which was inhabited by hundreds of bats.

During the night of April 22, the run to Tiburon Island was made and on the morning of April 23 the expedition arrived at Freshwater Bay where it was met by a hunting party of Seri Indians under their chief, Chickorito Romero. Tiburon is the hunting ground of the Seris who have long been looked upon as cannibals and a very warlike tribe, and we hear even today of the dangers and risks taken by landing on the island. However, stories about their cannibalism are mere echoes of old legends and certainly have no foundation in fact. They are truly savage in their mode of life, and perhaps would be dangerous if intoxicated, but there is no danger in visiting the island, if a party is well armed and keep together. The Seris have their main camp at Las Cruces on the mainland and cross the narrow channel to the island in dugout canoes. They are very fleet of foot and are said to be able to run down a deer. Their only shelter is a little wind break or mere semblance of hut made of brush, and their food consists of fish, turtles, pelicans and what deer they can shoot. We were informed, that, when possible, they cook their food, but are not a bit averse to eating it raw. On camping trips, water is carried in deer bladders. The party met had two or three guns, and a few cartridges, and were very anxious to obtain more. We gave them presents of old clothes, fish hooks, hardtack, cigarettes and a can of water. In order to avoid their visiting the *Silver Gate*, a run was made to an anchorage under the lee of Patos Island, a small low island five miles off the north end of Tiburon. We remained at anchor till the evening of April 24, riding out a heavy N. W. wind, and late in the evening sailed for Tepoca Bay on the Sonoran coast which was reached early next morning. A day's stop was made here, and the expedition continued along the low sandy coast on which it was found impossible to land on account of the heavy N. W. winds till early in the afternoon of April 26 when Georges Island, the most northern point visited by the expedition, was reached. This island is a barren rock less than a mile in length and a little over 200 feet in height. It is the nesting site of thousands of sea birds, and on a little flat at the north end was found

a very large colony of royal and elegant terns. Eggs were found in all stages of incubation. Other birds found nesting about the island were, red-billed tropic-bird, western gull, Heermann's gull, Brewster's booby and blue-footed booby. The island was at one time worked for guano.

On the evening of April 27, the *Silver Gate* started on the longest run of the cruise, across the Gulf to San Luis Island, a distance of 87 miles. On anchoring at San Luis in the morning, the wind was blowing so strong that it required two men to pull the skiff against it and sweeping around the cliffs, hurled great clouds of volcanic dust in the air. It was this that probably led to the rumors at various times that the island was in eruption. It is one of the most barren and rugged islands in the Gulf, covered with great streams of lava and volcanic ash. It was here that the largest colony of brown pelicans found on the trip was encountered, numbering several thousand birds. Anchorage was made for the night in San Luis Gonzales Bay, owing to the high winds at San Luis Island. San Luis Gonzales Bay affords excellent anchorage, but the surrounding country is very dry, barren, and uninteresting.

The morning of April 30, the expedition reached Puerto Refugio at the north end of Angel de la Guardia Island, the largest in the Gulf. It affords excellent anchorage and is protected from all winds, being sheltered on the north and west by Mejia Island, on the east by Granite Island, and on the south by Angel de la Guardia. From this anchorage, Mejia, a small rough volcanic island cut up by steep rocky cañons and notable for the abundance of large black chuck-wallas (*Sauromalus*), was visited, as was also Granite Island, a small chain of granite peaks somewhat similar to Georges Island and the nesting site of a number of birds, notably brown pelicans, reddish egrets and ospreys. Angel de la Guardia, the third island visited, from here presented a very rugged appearance, and just to the southward of the bay rose several barren sharp ridges terminating in peaks some 2000 to 3000 feet in height. A large valley with several dry washes running into it extends across the island from east to west. The entire north end of the island is particularly barren and land birds are very scarce.

On May 4, Isla Raza was visited a second time for the purpose of securing the eggs of Heermann's gull which we failed to get on the first visit, April 21. Two Mexican sloops were found with parties ashore gathering the eggs for the markets of Santa Rosalia and Guaymas. The eggers go over the island twice a day, sweeping it clean, and it was with difficulty that a few complete sets were secured. It is hoped that the report of Señor Contreras to the Mexican Government will help to put a stop to this practice and prevent the birds from being driven from their nesting grounds.

Angeles Bay on the Peninsula, the next anchorage made, was formerly the site of a small settlement belonging to the San Juan mine situated some distance in the interior. At the time of our visit, the tides were favorable for beaching the vessel so the opportunity was taken to put the *Silver Gate* on the beach to repair the rudder and paint the bottom, which operation required about two days. The vessel was also watered here from a small spring, yielding about 25 gallons per hour, which was situated about a quarter of a mile from the beach. The location of the spring is easily detected by a small grove of palm and cottonwood trees which can be seen some distance off shore. Angeles Bay affords excellent anchorage with a fine sand bottom, but small boats may be troubled by the strong winds that sometimes blow off the surrounding mountains.

On May 7, Las Animas Bay was reached, where good anchorage was found and a much needed rest enjoyed by all hands after the stop at Angeles Bay. The bay was found to be very shallow, and has a long stretch of sand beach back of which are many rough ridges of lava and dry washes with dense mesquite thickets along the edges. A Mexican rancher, met here, informed us that mountain sheep were abundant in the interior, and showed several heads that he had hanging about an old corral.

Sal si Puedes, a small barren island about a mile long, was visited on May 9. No anchorage was found here, the vessel lying off a very dangerous coast owing to the many sunken rocks and many others just awash. A colony of brown pelicans and a small colony of Heermann's gulls were found breeding. At noon, departure was taken for South San Lor-

enzo Island, and a couple of hours later, a landing was made on a long boulder beach on the west side. The island is about 12 miles long, steep and rugged, and the largest of the islands forming the east side of the Sal si Puedes Channel. Deep water is encountered close up to the beach, and good holding ground could not be found even with a kedge. The small cañons opening on the beach were visited, the hillsides being very steep and rocky, and without vegetation except now and then a cactus. Late in the afternoon, the run to San Francisquito Bay was made to anchor for the night.

San Francisquito Bay proved to be an excellent anchorage, the *Silver Gate* going into the little cove at the south end of the bay to anchor. Like most of the bays along the coast, the surrounding country was dry and barren. This country, however, contained an unusual amount of bird life. Quail were very abundant, and the large number of small birds was very noticeable. Among them were verdins, cactus wrens, thrashers, hummingbirds and flycatchers. A few coyotes, and a great number of jackrabbits were seen.

Tortuga, visited on May 11, is the only one of all the islands having a well-formed crater which is some 200 feet deep and about a half a mile across. The island is a little over 1000 feet in height, quite rugged, and cut up by many fresh lava flows. It is famous about the Gulf for the large number of rattlesnakes on it. The expedition secured 17 in a day and a half, and a few others were seen but not captured. Four specimens were taken from a pile of débris, formed by the breaking down of an old osprey nest in a giant cactus. The waters about the island abounded in whales and they were continually passing the *Silver Gate* while she was at anchor, some coming as close as 20 or 30 yards. The anchorage being poor, and subject to strong shifts of wind whirling around the island, it was necessary to run to San Marcos Island to anchor for the night.

San Marcos is a low barren island a little over five miles long, and is the site of a small tannery used to cure the hides of the cattle killed at Santa Rosalia. Water can be obtained by sinking wells, and at the south end, there are some probably permanent pools of water in the small cañons where there

are a few groves of palms. In this vicinity, there are also extensive gypsum beds.

On May 13, departure was taken for Mulegé via South Santa Inez Island, a barren low island, less than a mile long, and only about 30 feet above high water. Several old graves were seen on top of the island, and, along the shores were the remains of old camps used by the pearl fishermen. The island is most desolate and uninteresting.

Mulegé, a picturesque little village situated about a mile inland on the banks of the Rio Santa Rosalia and formerly the site of the Mission of Santa Rosalia de Mulegé, was reached early in the afternoon, the *Silver Gate* anchoring off the bar to await high water. The Captain of the Port came aboard and informed us that he had a direct wire from Mexico City to tender the expedition the courtesies of the port. The expedition was received here as well as at all other ports of entry with the utmost courtesy by the Mexican officials. A visit was paid to the old mission church, situated on a hill back of the town and commanding a magnificent view of the river and valley with its groves of palms and banana trees. The merchants of Mulegé are mostly Chinese and appear to be quite prosperous. Opportunity was taken here to get some necessary supplies and late in the afternoon of the 15th of May, the *Silver Gate* crossed the bar and anchored outside for the night.

At daybreak, the vessel was under way again bound for Ildefonso Island, but, on account of the heavy head wind and sea, put into San Nicolas Bay and anchored under the lee of Pt. Santa Antonita, a low rocky bluff some 15 feet high forming the southern point. A landing was made here, and about a mile back of the beach some of the most productive fossil beds encountered on the expedition were found. The low lands back of the beach extend well into the interior, and are covered with a heavy growth of cactus and mesquite. Land birds were fairly plentiful; verdins, cactus wrens, quail and gnatcatchers. The heavy winds continued well into the night, but calmed down towards daybreak when the run to Ildefonso Island was made. It was found to be a barren rocky island a little more than a mile in length and nearly 400 feet in height. On the west side was found quite a large

pelican colony and a small colony of Heermann's gulls. Many frigate birds were flying about the north end, but no nesting sites were found. The vessel found anchorage with a kedge in 15 fathoms on the east side of the island, but the wind hauling to the southeast and kicking up a rough sea, the *Silver Gate* ran to the north end and took off the landing party, then making a rough passage across the channel, anchored again under the lee of Pt. Santa Antonita.

Coronados, a rough volcanic island nearly two miles in length and about a mile and a half wide, was reached on the morning of May 18, and excellent protection from the southeast wind found under the lee of the long sandspit extending from the southwest end of the island. Although a small island, birds were very plentiful; flycatchers, hummingbirds, house finches, duck hawks, ravens and buzzards being noted. Nine species of reptiles were found on it. Owing to the excellent protection it affords from both northerly and southerly winds, Coronados is frequently visited by vessels sailing in the Gulf.

On the morning of May 19, the expedition arrived at the town of Loreto, the first capital and the site of the Mission of Loreto, the first in either of the Californias. It was founded by Padre Juan Maria Salvatierra, on October 25, 1679. Loreto is most intimately connected with the history of California, as it was the headquarters of all the missions, and it was from here that the Franciscan Padre Serra traversed the peninsula in a northwesterly direction, till he crossed the 32nd parallel, and on the feast of St. James, 1769, founded the Mission of San Diego, the first in Upper California. In the autumn of 1717, the town was destroyed by a great storm, but was rebuilt and always remained one of the principal towns in Lower California. The present stone church is in a fair state of preservation and dates from 1793. It is still in use, and at present in care of Padre José Negreta who is endeavoring to restore it. It had by far the most elaborate interior of any of the Missions of either Upper or Lower California, and still contains many of the old paintings and statues. Around the patio are the walls of the old college which are in an excellent state of preservation. Loreto exports much of the bark of the Palo Blanco used in the tannery at La Paz.

On the afternoon of May 20, the expedition proceeded to the west coast of Carmen Island and made the first stop at Puerto Ballandra, a little harbor on the northwest coast. It was found to be an excellent anchorage, the entrance between headlands being only a few hundred yards wide. It is frequently used by small boats from Loreto, which run over to take shelter in bad weather. Several species of reptiles were particularly abundant in this vicinity, and also many small birds were noticed, notably cardinals and verdins. This locality is probably the best collecting ground on the island. May 23 was spent at Marquer Bay on the southwest coast where some rich fossil beds were found. The southern end of the island was found to be very dry and barren and cut up by innumerable small gullies. Having to anchor close to the beach on a lee shore, it was necessary to cross to the peninsula and make anchorage for the night at Puerto Escondido.

Puerto Escondido, or hidden port, is a landlocked harbor offering perfect shelter from all winds, the entrance being about 70 feet wide. An excellent view of the Sierra Gigantas is had from the bay and many deep cañons with groves of palms are plainly visible. A flat some three miles long, and covered with a heavy growth of cactus and mesquite extends from the shore line to the foot of the Sierras.

Danzante Island was visited next morning, May 24. It is a small rugged island about three and a half miles long with precipitous sides, so it is only possible to land at the mouths of one or two little cañons that reach to the seacoast. All of the promising looking spots were gone over in a few hours, and departure was taken for Monserrate Island which was reached at 2 P. M. of the same day.

Monserrate Island is about four miles long and a little over 700 feet in height. Anchorage was made off the north end opposite a small sand beach. The island, at this point, was found to be extremely barren and cut up by small dry washes with walls of lava on each side. Reptiles and birds were fairly plentiful. Among the latter, verdins, flycatchers, and gnatcatchers were quite common. At noon we moved around to the south end of the island and found collecting very much worse. Some pearl oyster shells were taken by diving from the skiff close in to the beach.

The wind, shifting early in the afternoon, put the vessel on a lee shore which necessitated moving over to Agua Verde Bay on the peninsula. The anchorage was reached late in the afternoon and, on entering the bay, the vessel passed close to Solitaria Rock, a large pinnacle 115 feet high with an osprey's nest on the tip of it. There is a small cattle ranch at the south end of the bay where freshwater and wood may be obtained. Advantage was taken of this, and the vessel watered and a load of wood taken on for the galley. Back of the beach is much level country covered with a heavy growth of mesquite and cactus. Among the numerous cactus thickets doves, quail, and jackrabbits were very abundant and extremely tame.

Having taken on all the wood and water possible, the vessel proceeded to Santa Cruz Island and a landing was made on the morning of May 27. Santa Cruz Island is a steep granite ridge about 1500 feet high and four miles long. It is possible in fine weather to land at one or two places on the west side. At the southwest end there is a small beach with a sunken ridge extending towards the southwest on which anchorage may be made with a kedge, providing the wind is light. Two of the largest cañons were visited from this landing. They proved to be very barren and practically without bird life. The usual giant cacti were present, and an abundance of lizards (*Sator angustus*). At noon, a strong southeast wind coming up, the vessel was no longer able to hold on with the kedge, so the landing party was called off, and the vessel proceeded to San Diego Island where good protection is found from the southeast winds. San Diego was found to be about the same as Santa Cruz only a little smaller and not quite so rugged. It is about a mile in length and a little over 700 feet in height.

On May 28, Salinas Bay, on the west coast of San José Island, was visited. The vicinity of the anchorage presented a series of low hills densely covered with brush. On going ashore the country was found to be just as it appeared and burro trails had to be followed in places in order to make any progress through the brush. Many deer signs were seen as well as one or two animals. A great many land birds were seen here; cardinals, doves, and hummingbirds were abun-

dant, and woodpeckers particularly so. A stop at Amortajada Bay occupied another day and on May 30, San Francisco Island was visited.

San Francisco Island, although a small one, contains quite a large fauna. Ravens, vultures and frigate birds were abundant and a few small land birds were seen. In the low bushes skirting the back of the sand beach were many woodrat nests. Three or four species of lizards were also found.

On May 30, Espiritu Santo Island, which forms the east shore of La Paz Bay, was reached, and anchorage made at Isla Partida, the northern portion of the island which is separated from Espiritu Santo proper by a narrow boat channel. The island from the sea presents the appearance of a large tableland with many small peaks scattered about it. It is strictly volcanic and very rough. The anchorage at Isla Partida is well sheltered, but very shallow, making it necessary to anchor two or three hundred yards off the sand beach. Back of this beach, a deep cañon extends towards the interior. A well has been sunk at the mouth of it, where fishermen obtain water of a somewhat doubtful quality. Domestic goats run wild over the island. San Gabriel Bay, on Espiritu Santo proper, was once the site of a station for raising pearl oysters, but the settlement was unfortunately destroyed during the revolution and no attempt was ever made to rebuild it.

On June 2, the *Silver Gate* dropped anchor off La Paz, the principal port of the Peninsula of Lower California, and capital of the southern district. Next day, the vessel loaded supplies and fuel which had been in storage awaiting the arrival of the expedition. La Paz is a typical Mexican town of some 4000 inhabitants. Its principal exports are hides, fruits, and pearls. It has long been famous as one of the greatest ports in the world for its pearl fisheries.

On the evening of June 5, all supplies and fuel being on board, the *Silver Gate* moved down the coast and anchored opposite Ceralbo Island. The run across the San Lorenzo Channel was made at daybreak, and on the morning of June 6 anchorage was made off Gordas Point, the southernmost locality visited by the expedition.

Ceralbo is a high, barren, mountain ridge some 15 miles in length covered with a dense growth of brush and cactus. It

reaches a height of nearly 2500 feet. Señor Antonio Ruffo has a small cattle ranch on the island, but, on account of the lack of suitable feed, the animals fare poorly. Freshwater is obtained from wells at the ranchhouse about four miles north of Gordas Point. About two and a half days were spent working along the west coast, and, at noon on June 8, the start northward was made.

According to a previously arranged schedule, all the islands possible were to be visited on the way south, and on the northern trip, the most profitable collecting grounds were to be worked together with such new ones as time would permit. Santa Catalina was the only island missed on the run south, and this one on account of shortage of fuel. After having bucked head winds continuously since leaving Guaymas, it was deemed advisable to conserve fuel and visit the island on the run north. This was done on June 12, when the *Silver Gate* anchored off the southwest end.

Santa Catalina being well off shore, and out of the track of vessels, is probably seldom visited. The island is about seven miles long and 1500 feet in height, very rough, and covered with a dense growth of brush and cactus. In the small valley opposite the anchorage, land shells were found in greater abundance than at any other place visited by the expedition. Land birds were also fairly abundant. The wind, hauling to the westward early in the afternoon, put the vessel on a lee shore, so a run was made to Monserrate Island where better anchorage could be found.

June 14 found the *Silver Gate* again at anchor in the little harbor of Puerto Escondido. Two members of the expedition made a trip into the Sierra Gigantas, exploring a large cañon visible from the anchorage and reported finding plenty of excellent freshwater and several large groves of palm trees.

On the morning of the 15th, the expedition was again under way and, after a short stop at Danzante, the *Silver Gate* rounded the southern end of Carmen Island and, cruising up the east coast, anchored at Agua Grande, five miles south of Salinas Bay. About half a mile up the cañon from the anchorage is an excellent spring of freshwater. A small reservoir has been constructed to hold the water which is piped to the coast. It is taken by boat to the settlement at

Salinas Bay, as freshwater cannot be obtained there. In the evening the *Silver Gate* shifted her berth and anchored off the settlement.

Carmen Island is probably the best known of all the islands in the Gulf on account of its extensive salt deposits. An immense lake of remarkably pure salt extends over a mile inland and is entirely shut off from the waters of the Gulf. These salt beds have been known and worked for years. As far back as 1717, Father Juan Maria Salvatierra petitioned the King of Spain for permission to work the salt beds, saying: "There is enough salt to supply the whole world." At the present date, the concession is in the hands of an English company.

On the morning of June 17, the expedition arrived at Guadalupe Point, Concepcion Bay. Collecting being poor, a run down the east side of the bay was made. Early in the afternoon, the wind and sea became so strong it was necessary to run under the lee of San Ignacio and drop anchor. All hands remained on board. Next morning, the vessel made a run across to the west side and dropped anchor in Coyote Bay. Owing to lack of time only short stops were now being made and departure was taken early in the morning for San Marcos Island which was visited for the second time.

On the afternoon of June 20, the expedition arrived at Santa Rosalia, the capital of the northern district of Lower California, and the site of one of the world's largest copper mines. The port shows the work of foreign capital and a fine breakwater made of slag from the smelter has been constructed, giving excellent shelter from the storms that sometimes sweep the Gulf. The members of the expedition were entertained by the Mexican and French officials, and were taken on a tour of the mines. There are now over 80 miles of tunnels some of which run 33 feet below sea level. The port regulations, prohibiting vessels leaving between sunset and sunrise, were very kindly waived by the officials in order to facilitate the movements of the expedition, and, at 4 A. M. on June 22, the *Silver Gate* weighed anchor and proceeded to Tortuga Island where a second stop of one day was made.

Continuing northward, stops were made at San Francisco Bay on June 23, North and South San Lorenzo Islands

on June 24, and Isla Partida on June 25. The eggs of the least petrel were again collected and found in all stages of incubation.

Angeles Bay was visited for the second time on June 25 and a stop of two days was made. During this stop, all hands watered ship, and, on the morning of June 28, the *Silver Gate* headed up Ballenas Channel, cruising along the west coast of Angel de la Guardia Island. It was the intention to make a landing at Humbug Bay, but a heavy wind and sea sweeping down the channel prevented this, so the course was set for Puerto Refugio, which was reached shortly after noon.

On the morning of June 30, a cruise along the east side of Angel de la Guardia was made, but again heavy winds prevented a landing, and about noon the vessel anchored under the lee of Pond Island at the southern end of Angel de la Guardia. The southeast end of Angel de la Guardia was visited from this anchorage, and an effort made to discover any signs of the supposed ancient ruins said to be on the island. Not the least signs of any were found. From some of the higher elevations, several large valleys extending some miles inland, and cut up by the characteristic dry washes of the desert, were seen. Considerably more vegetation was found here than at the northern end.

At 4 A. M. on July 2, departure was taken for Tiburon Island, but on account of the heavy southeast wind and sea, the vessel ran under the lee of Isla Partida and came to anchor. All hands remained on board waiting for the weather to moderate. The wind and sea going down somewhat early in the afternoon, the run to Tiburon was continued, and after a rough passage, anchorage was made off the southwest end of the island about three miles north of Willard's Point. A landing party went ashore early next morning working towards the interior. Many deer trails and beds under the mesquite trees were seen and also several animals. The large antelope jack rabbit was quite common. Signs of old Indian camps were seen but no Indians were met at this end of the island. Next morning the vessel moved around to the southeast end. The country was found to be very similar to that just left and plenty of deer signs were found. The animals

are probably quite abundant, although hunted by the Seri Indians, some of whom now possess firearms.

In the afternoon of July 5, the run to Pelican Island, a small island three miles off Kino Point on the coast of Sonora, was made. As the vessel approached the island, hundreds of frigate birds were seen hovering over it, and the sand spit extending from the west end, was literally covered with pelicans. The island is practically destitute of vegetation and is nothing more than a bird rookery. The heavy swell running made the anchorage poor, so the vessel's berth was shifted and anchorage made under the lee of Kino Point.

At 4 A. M. on July 6, anchor was weighed, and a course set for Ensenada Grande, 60 miles to the southward, which, on account of a heavy head wind and sea, was not reached till 4 P. M. As the *Silver Gate* rounded the northern point of the bay, several groves of palms as well as many single trees were seen scattered about the high bluffs. A day's stop was made here, and the *Silver Gate* was again headed south and a course set for San Carlos Bay, a two hours' run.

San Carlos is a small landlocked harbor about 10 miles to the westward of Guaymas, and affords excellent anchorage as it is protected from all winds. Two days were spent here, packing up the various collections for shipment and preparing for the return to Guaymas. At 6 A. M. on July 10, the expedition left San Carlos Bay, arriving at Guaymas at 10:15 A. M., after spending 87 days in the field and making a cruise of 1811 miles.

LOCALITIES VISITED

Coast of Sonora

Guaymas	April 13-16	July 10-11-12-13
San Carlos Bay.....	April 16	June 7-8-9-10
San Pedro Bay (Ensenada Grande) ..	July 6-7	
Kino Point.....	July 5	
Tepoca Bay.....	April 25	

Peninsula of Lower California

San Luis Gonzales Bay.....	April 28-29	
Angeles Bay.....	May 4-5-6-7	June 26-27
Las Animas Bay.....	May 7-8	
San Francisquito Bay.....	May 9-10	June 23
Santa Teresa Bay.....	May 10	
Santa Rosalia.....	June 20-21	
Mulegé	May 13-14-15	
Guadalupe Point (Concepcion Bay) ..	June 17	
Coyote Bay	June 18	
Point Santa Antonita (San Nicolas Bay)	May 16-17	
Loreto	May 19-20	
Puerto Escondido.....	May 23	June 13-14
Agua Verde Bay.....	May 25-26	
San Evaristo.....	June 10	
La Paz.....	June 2-3-4-5	

Islands in the Gulf of California

San Pedro Nolasco.....	April 17	
San Pedro Martir.....	April 18	
San Esteban.....	April 19-20	
Tiburon		
Freshwater Bay.....	April 23	
Willard's Point.....	July 3	
Monument Point.....	July 4	
2 miles north of Monument Point ..	July 5	
Patos	April 23-24	
Georges	April 26-27	
San Luis.....	April 28	
Mejia	April 30	June 28
Granite	May 2	
Angel de la Guardia		
Puerto Refugio.....	April 30	May 1 June 28-29
Lagoon E. central coast.....	May 2	
Palm Cañon.....	May 3	
Pond Island Bay.....	June 30	July 1
Smiths	June 27	
Isla Partida.....	April 21-22	May 3 June 24-25
Isla Raza.....	April 21	May 4

Sal si Puedes.....	May 9	
North San Lorenzo.....	June 24	
South San Lorenzo.....	May 9	June 4
Tortuga	May 11	June 22
San Marcos		
Vicinity of Tannery.....	May 12	June 20
Southwest point.....	June 19	
South Santa Inez.....	May 13	
Ildefonso	May 17	
Coronados	May 18	
Carmen		
Puerto Bellandra.....	May 20-21-22	
Marquer Bay.....	May 23	
Agua Grande.....	June 15	
Salinas Bay.....	June 15-16	
Danzante	May 24	June 15
Monserate		
North end.....	May 25	June 13
South end.....	May 25	
Santa Catalina.....	June 12	
Santa Cruz.....	May 27	June 11
San Diego.....	May 27	June 11
San José (San Josef)		
Vicinity of Salt Beds.....	May 27	June 10
Amortajada Bay.....	May 28-29	
San Francisco.....	May 30	
Isla Partida (Espiritu Santo).....	May 30-31	
Espiritu Santo		
El Candelero.....	June 8-9	
San Gabriel Bay.....	June 1	
Ceralbo		
Gordas Point.....	June 6-7	
Ruffo Ranch.....	June 7	
El Mostrador.....	June 8	
Las Galleras (East and West).....	June 13	
Ballena	June 9	
Pond	July 1	
Pelican	July 5	